

(No Model.)

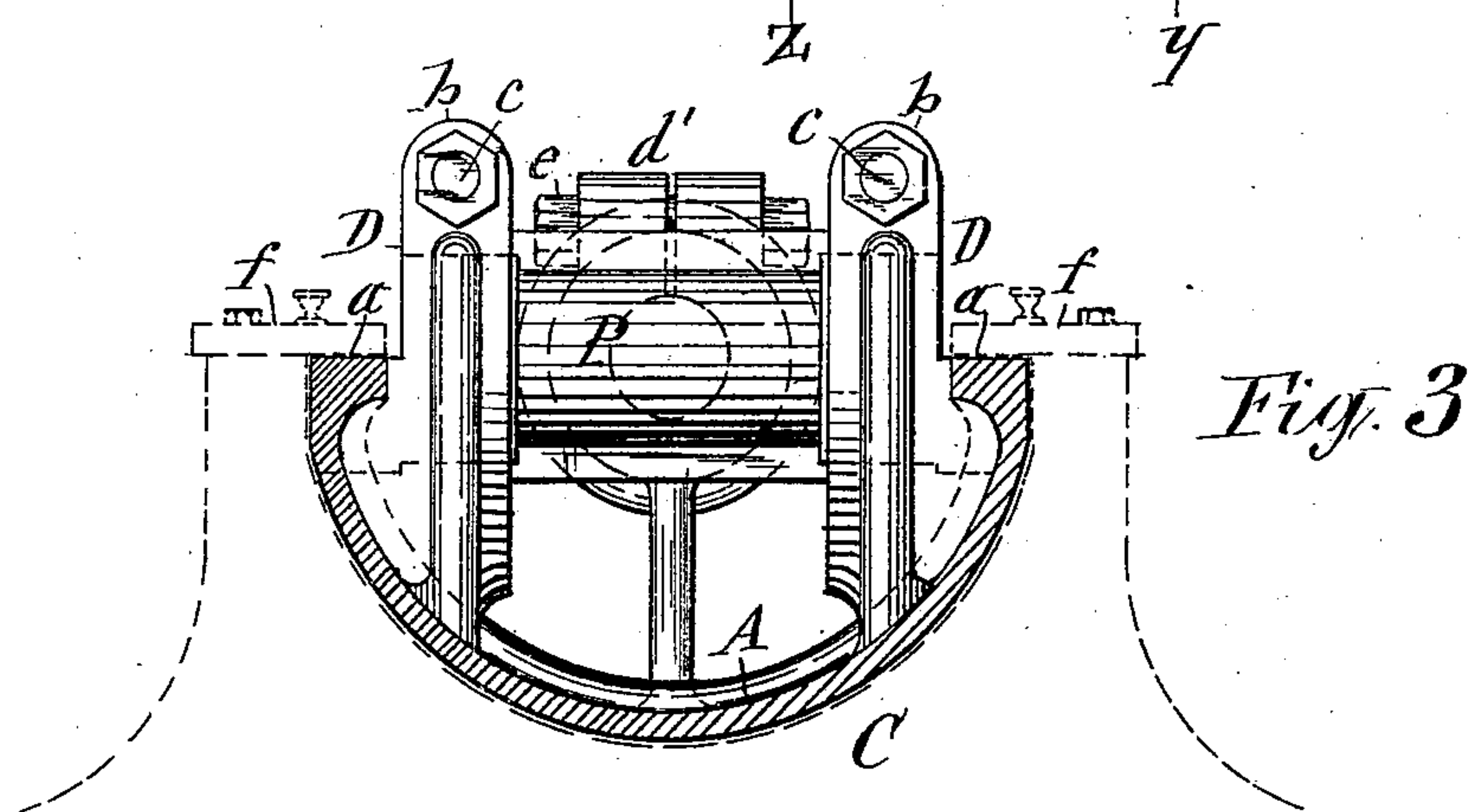
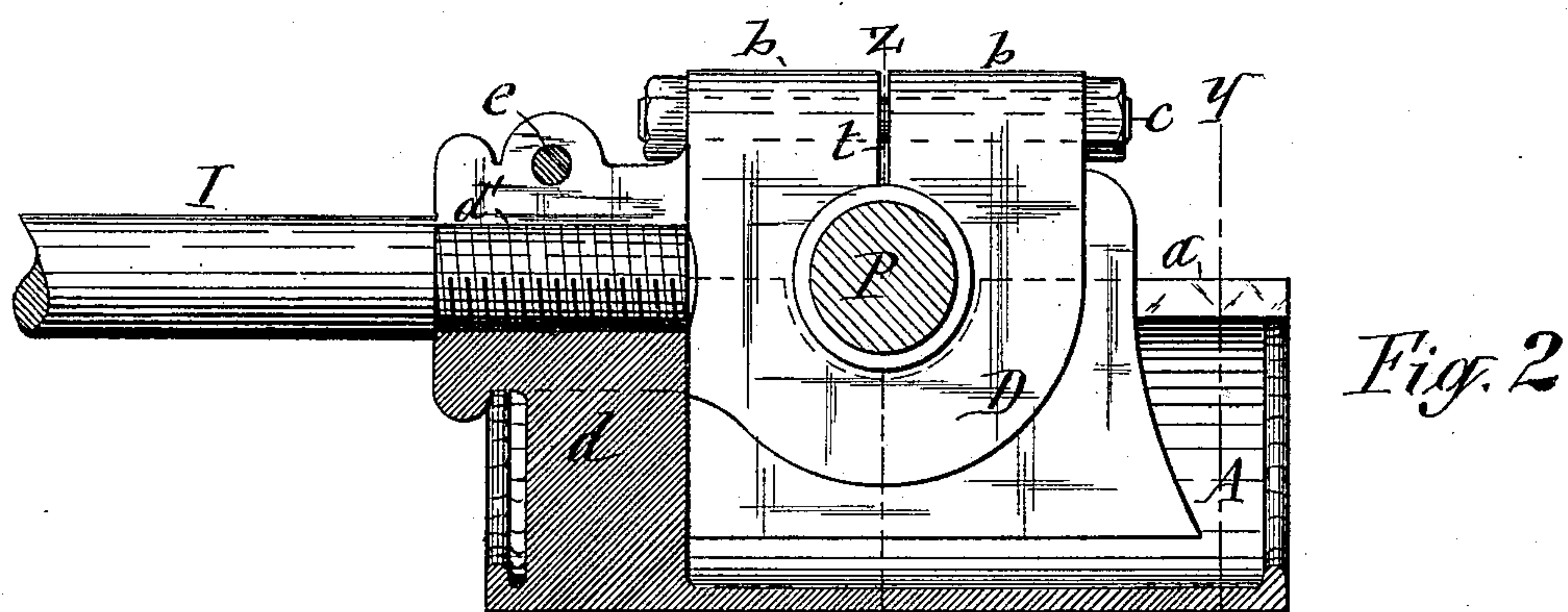
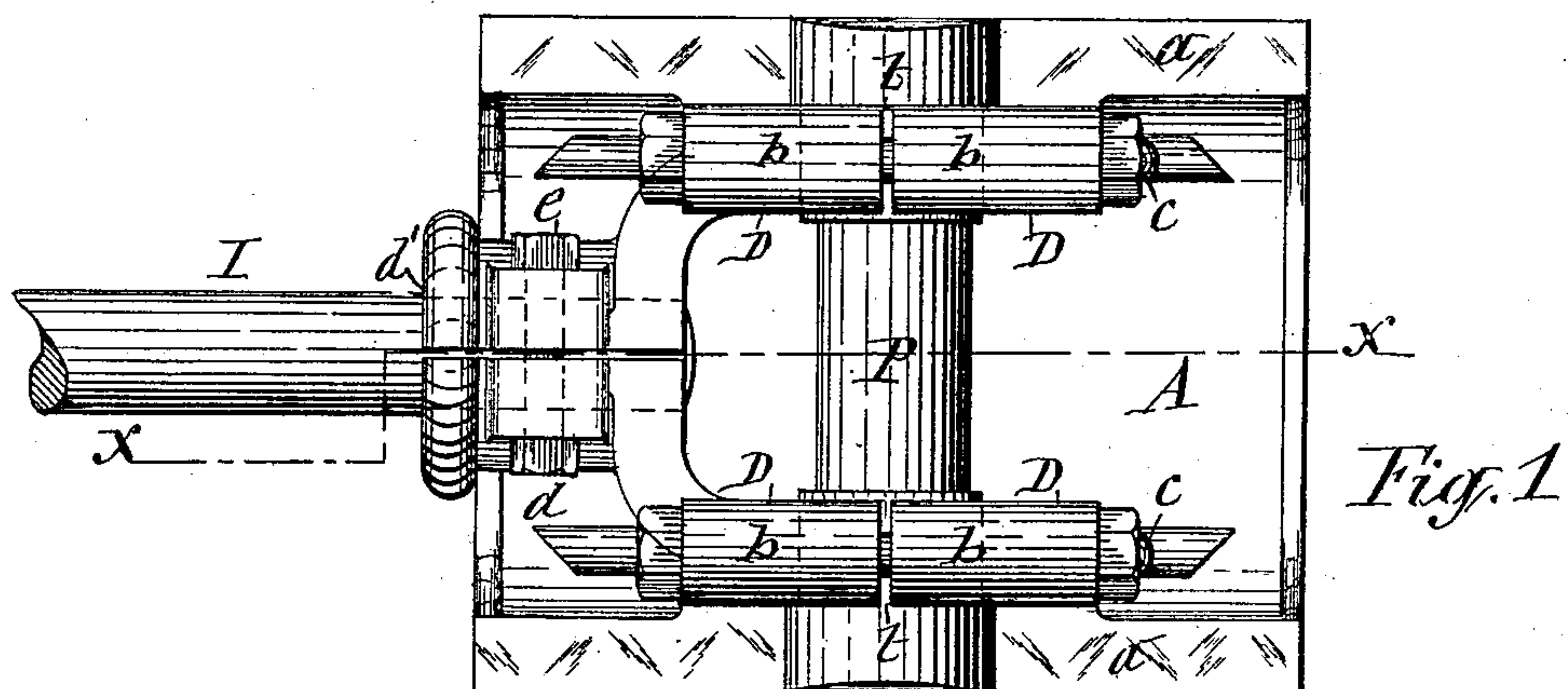
2 Sheets—Sheet 1.

J. J. TONKIN.

CROSS HEAD FOR STEAM ENGINES.

No. 397,318.

Patented Feb. 5, 1889.



WITNESSES:

A. F. Walz,
J. J. Laess

INVENTOR

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BY
Wm. L. Laessle & Co.
ATTORNEYS

(No Model.)

2 Sheets—Sheet 2.

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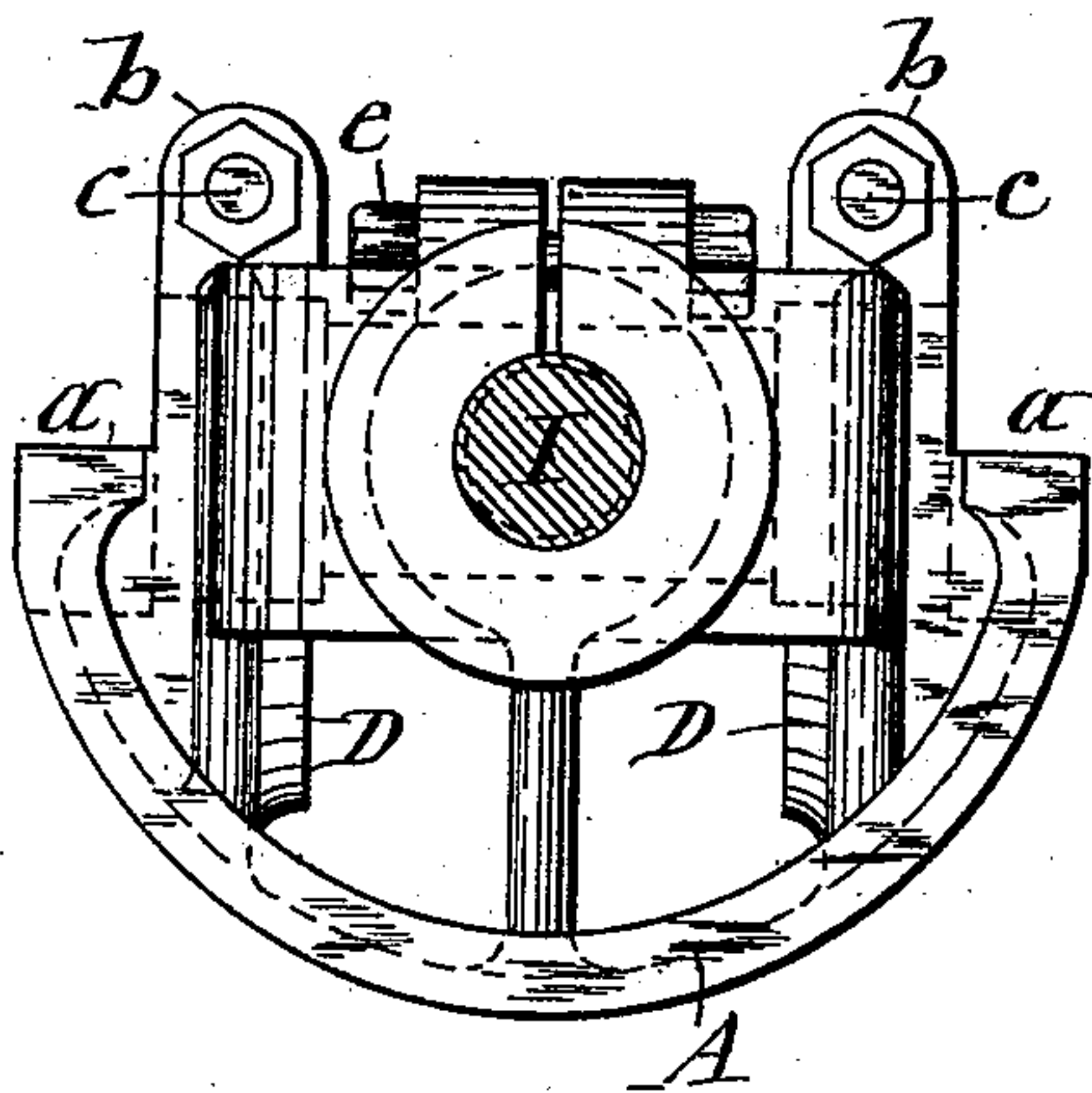


Fig. 4

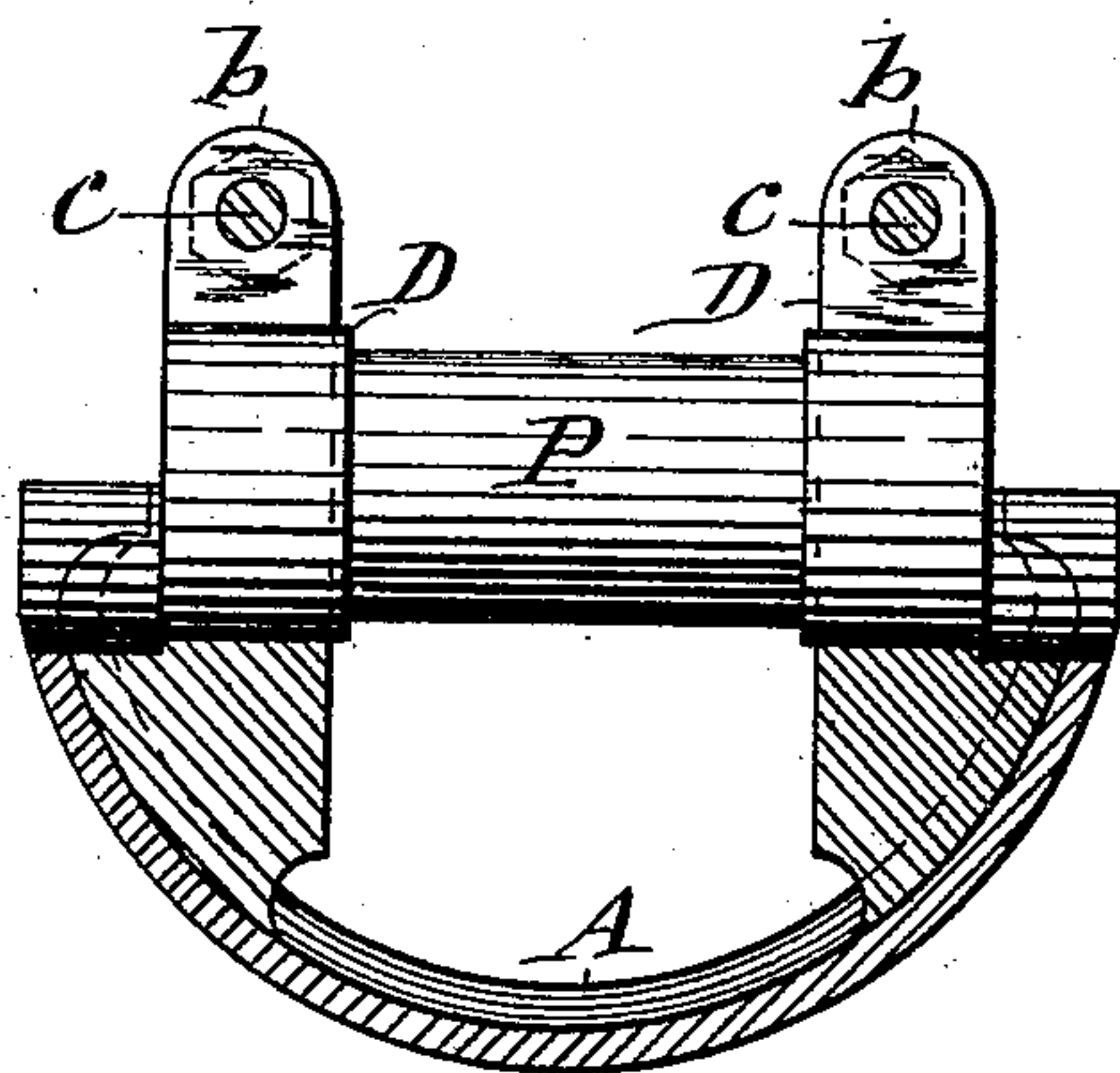


Fig. 5

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UNITED STATES PATENT OFFICE.

JOHN JAY TONKIN, OF OSWEGO, NEW YORK, ASSIGNOR TO THOMSON KINGSFORD, OF SAME PLACE.

CROSS-HEAD FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 397,318, dated February 5, 1889.

Application filed October 10, 1888. Serial No. 287,751. (No model.)

To all whom it may concern:

Be it known that I, JOHN JAY TONKIN, of Oswego, in the county of Oswego, in the State of New York, have invented new and useful
5 Improvements in Cross-Heads for Steam-Engines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention consists in a novel construction of a cross-head having a transversely-convexed bottom bearing riding in a correspondingly-concaved guide, and having at opposite sides longitudinal top bearings sliding on gibs secured to the guide, said construction and combination of parts rendering the
15 cross-head light and yet strong, and allowing the same to be maintained properly lubricated and easily in proper alignment.

The invention also consists in improved attachments of the wrist-pin and piston-rod to the cross-head, all as hereinafter more fully explained, and specifically set forth in the claims.

In the annexed drawings, Figure 1 is a top plan view of a cross-head embodying my invention. Fig. 2 is a longitudinal section on line *x x*, Fig. 1. Fig. 3 is a transverse section on line *y y*, Fig. 2. Fig. 4 is a face view of the end of the cross-head nearest the cylinder of the engine; and Fig. 5 is a transverse section on line *z z*, Fig. 2.

Similar letters of reference indicate corresponding parts.

My improved cross-head is composed of the
35 bottom plate, A, which is formed concavo-convex in cross-section, with the convex side downward to present a convex bearing for the cross-head. The two sides of the cross-head are formed with horizontal longitudinal top bearings, *a a*, preferably formed by inward offsets, as shown in Fig. 3 of the drawings.

From the bottom plate, A, rise two ears, D D, which are provided with cylindrical seats for the ends of the wrist-pin P, which are
45 formed correspondingly. Said ears are split vertically from the wrist-pin seats through the top of the ears, as shown at *t*, and the tops of said split portions are formed with longitudinal sleeves *b b*, through which passes a
50 bolt, *c*, provided with a nut by which to draw

the said split portions together, and thus tighten the wrist-pin in the ears. Said attachment also permits of turning the wrist-pin in its seat, so as to present the top and bottom portions of the wrist-pin toward the front and rear in case the wrist-pin has become worn. The end of the cross-head toward the cylinder of the engine is formed with a transverse bridge, *d*, which has an eye, *d'*, for the reception of the end of the piston-rod I, which is secured to the head-block, preferably by screw-threads on the end portion of the piston-rod engaging corresponding screw-threads in the eye *d'*, as illustrated in Fig. 2 of the drawings. The bridge *d*, I also split vertically
65 longitudinally from the eye *d'* through the top of the bridge and perforate the split portions thereof for the reception of a bolt, *e*, provided on one or both ends with a nut or nuts by which to draw the split portions of the bridge together, and thereby insure the attachment of the piston-rod. The bottom plate, A, ears D D, with their sleeves *b b*, and the bridge *d* are all cast in one piece.

The described cross-head is mounted on a guide, C, which is formed concave to correspond to the convex bottom bearing of the cross-head, as illustrated by dotted lines in Fig. 3 of the drawings, and to the top of the side walls of this guide I attach gibs *f f*, which project over the top bearings, *a a*, of the cross-head and serve as top guides for the same. Said gibs prevent the cross-head from turning on its bottom bearing and also exclude dust from the bearings.

It will also be observed that the bottom bearing of the cross-head is easily maintained lubricated, and its shape and extensive wearing-surface render it very durable.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A cross-head provided with a transversely-convexed bottom bearing and with longitudinal top bearings on opposite sides of the cross-head, in combination with a correspondingly-concaved guide, and gibs secured to the said guide and projecting over the top bearings of the cross-head, as set forth,

2. A cross-head composed of a bottom plate

formed convex in cross-section on its under side and with horizontal longitudinal top bearings on opposite sides of the cross-head, and ears projecting from said bottom plate, 5 all formed in one piece, in combination with a correspondingly-concaved guide, gibs secured to the guide and projecting over the horizontal top bearings of the cross-head, and the wrist-pin connected to the said ears, substantially 10 as described and shown.

3. In connection with the wrist-pin P, the cross-head formed with the ears D D, having seats for the wrist-pin and split transversely from said seats through the tops of the ears, 15 and formed with longitudinal sleeves *b b* at the upper ends of the split portions, and bolts *c c*, passing through the sleeves and provided with nuts for adjustably clamping the split parts of the ears together, substantially as 20 described and shown.

4. In combination with the piston-rod I, the cross-head provided with the bridge *d*, having the eye *d'* for the reception of the end of the piston-rod and split longitudinally vertically from said eye through the top of the 25 bridge, and the bolt *e*, clamping the split portions of the bridge together, substantially as described and shown.

In testimony whereof I have hereunto signed my name, in the presence of two witnesses, at 30 Oswego, in the county of Oswego, in the State of New York, this 28th day of September, 1888.

JOHN JAY TONKIN. [L. S.]

Witnesses:

THOMAS P. KINGSFORD,
HENRY L. HOWE.